

In the Specification

Please amend the title of the invention as follows as noted by the

Examiner:

CHEMICAL AGENT ADDITIVES IN COPPER CMP SLURRY

In the Claims

Please amend the claims as follows:

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4. (Amended) The method of claim 1, wherein said etching agent includes an oxidizer selected from the group consisting of H_2O_2 , KIO_3 , and Fe^{3+} ; an acid or base of HF or $(\text{CH}_3)_3\text{N}(\text{OH})$; and a buffering agent or organic amine selected from the group consisting of $\text{NH}_4(\text{CH}_3\text{CO}_2)$, alkanol amine, and amino acid.
5. (Amended) The method of claim 1, wherein said carbonyl derivative of benzotriazole comprises from about 0.0001 to 10 weight% of said polishing agent.
6. (Amended) The method of claim 1, wherein said carbonyl derivative of benzotriazole comprises from about 0.01 to 5.00 weight% of said slurry.
7. (Amended) The method of claim 1, wherein said metal is selected from the group consisting of Cu , a Cu alloy, Al , and an Al alloy.

8. (Amended) A polishing method comprising the steps of:

forming a film made of material containing a metal as a main component over a substrate having recessed portions on a surface thereof so as to fill said recessed portions with said film; and

5 polishing said film by a chemical mechanical polishing method using a slurry including a polishing agent containing

a chemical agent being responsible for forming a protective film on the surface of said film by reacting with said material containing a metal as a main component, and

10 an etching agent being responsible for etching said material containing a metal as a main component;

thereby forming a conductive film in said recessed portions,

wherein said metal is Cu or a Cu alloy and said chemical agent includes at least a carbonyl derivative of benzotriazole.

11. (Amended) The method of claim 8, wherein said etching agent includes an oxidizer selected from the group consisting of H_2O_2 , KIO_3 , and Fe^{3+} ; an acid or base of HF or $(CH_3)_3N(OH)$; and a buffering agent or organic amine selected from the group consisting of $NH_4(CH_3CO_2)$, alkanol amine, and amino acid.

12. (Amended) The method of claim 8, wherein said carbonyl derivative of benzotriazole comprises from about 0.0001 to 10 weight% of said slurry.

13. (Amended) The method of claim 8, wherein said carbonyl derivative of benzotriazole comprises from about 0.01 to 5.00 weight% of said slurry.

14. (Amended) A polishing method comprising the steps of:

forming a film made of material containing a metal as a main component over a substrate having recessed portions on a surface thereof so as to fill said recessed portions with said film; and

5 polishing said film by a chemical mechanical polishing method using a slurry including a polishing agent containing

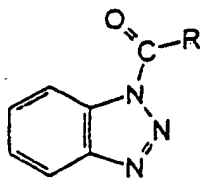
a chemical agent being responsible for forming a protective film on the surface of said film by reacting with said material containing a metal as a main component, and

10 an etching agent being responsible for etching said material containing a metal as a main component;

thereby forming a conductive film in said recessed portions,

wherein said metal is Cu or a Cu alloy and said chemical agent includes at least a carbonyl derivative of benzotriazole having the formula

15



20 where R is selected from the group consisting of - CH₃ (methyl), - CH₂CH₃ (ethyl), - CH₂CH₂CH₃ (propyl), - CH₂CH₂CH₂CH₃ (n-butyl), - C(CH₃)₃ (tert-butyl), p-

a2 tolyl, 1 - Benzotriazolyl - 1 - butamido, 2 - pyridyl, 3 - pyridyl, 4 - pyridyl, 2 - thiophenyl, and 3 - thiophenyl.

a3 16. (Amended) The method of claim 14, wherein said etching agent includes an oxidizer selected from the group consisting of H_2O_2 , KIO_3 , and Fe^{3+} ; an acid or base of HF or $(\text{CH}_3)_3\text{N}(\text{OH})$; and a buffering agent or organic amine selected from the group consisting of $\text{NH}_4(\text{CH}_3\text{CO}_2)$, alkanol amine, and amino acid.

17. (Amended) The method of claim 14, wherein said carbonyl derivative of benzotriazole comprises from about 0.0001 to 10 weight% of said slurry.

18. (Amended) The method of claim 14, wherein said carbonyl derivative of benzotriazole comprises from about 0.01 to 5.00 weight% of said slurry.

Remarks

Examiner Smetana is thanked for the thorough Office Action.

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The title of the invention has been amended as noted by the Examiner.